

SELLTIZ, WRIGHTSMAN AND COOK'S

Research Methods in Social Relations

FOURTH EDITION

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This chapter was written by Daryl J. Bem.

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You have conducted a study and analyzed the data. Now it is time to tell the world what you have learned, to write the research report. Even if your report is not for a professional audience, we suggest that you adopt the format used for research articles in the professional journals. This format not only permits readers to read the report from beginning to end, as they would any coherent narrative, but also to scan it for a quick overview of the study or to locate specific information easily by turning directly to the relevant section. Despite the standardized format, your individual style will find ample opportunity for expression.

The report is divided into the following sections:

1. Introduction. (What problem were you investigating and why?)
2. Method. (What procedures did you employ?)
3. Results. (What did you find?)
4. Discussion. (What do your findings mean? Where do we go from here?)
5. Summary or Abstract. (A brief summary of points 1-4.)
6. References (An alphabetical list of books and articles cited in the report.)
7. Appendix (Optional). (Copies of questionnaires, scales, or stimulus materials used in the research or tables of data too extensive or too peripheral to include in the body of the report.)

In this chapter we provide a step-by-step procedure for filling in the details of this outline, as well as some stylistic suggestions for achieving maximum clarity in your report.

SOME PRELIMINARY CONSIDERATIONS

Which Report Should You Write?

There are two possible reports you can write: (1) the report you had in mind when you designed your study or (2) the report that makes the most sense after you have seen the results. They are rarely the same, and the correct answer is (2).

According to the popular view of the research process, an investigator begins with a formal theory, derives one or more hypotheses from that theory, designs and conducts a study to test these hypotheses, analyzes the data to see if they were confirmed, and then chronicles this sequence of events in the research report. If research actually proceeded according to this plan, then most of the research report could be prepared before the data are collected. The "Introduction" and "Method" sections could be completely written beforehand, and the "Results" section could be prepared in skeleton form, leaving spaces to be filled in by the specific numerical results obtained. The investigator could even prepare two possible discussion sections, one for positive or confirming results, the other for negative or disconfirming results. Research, however, does not usually go according to this plan—even when that was the plan the investigator had in mind to begin with. Accordingly, we suggest you begin thinking about your report by thinking about your data.

As we noted in Chapter 13, data analysis consists of more than simply checking to see if your original hypotheses were confirmed or disconfirmed. It also involves exploring the data thoroughly to see if there are any interesting results that may not have been originally anticipated. For example, by looking at the data separately for men and women, you might discover an unexpected sex difference. You may even find some results that are far more informative than the confirmation or disconfirmation of your original hypotheses. Statistical tests can help you decide just how much faith you should put in such discoveries. Perhaps you will only be able to mention these findings tentatively in your report and to suggest further research for following them up. On the other hand, you might be justified in deciding to center your report around these new findings and to subordinate or even ignore your original hypotheses.

This is not advice to suppress negative results or findings unfavorable to your theory. If your study was genuinely designed to test hypotheses derived from a formal theory or if the original hypotheses are of wide general interest for some other reason, then the confirmation or disconfirmation of these hypotheses should remain the central focus of your report. In particular, the integrity of the scientific enterprise requires an investigator to report negative or disconfirming results no matter how personally disappointing this outcome might be.

But this requirement assumes that somebody out there cares about the disconfirmation of the hypotheses. Many, if not most, studies in social relations are launched from some personal speculations or idiosyncratic questions of the "I-wonder-if . . ." variety. If your study is of this type, then nobody is likely to care if you were wrong. Contrary to the conventional wisdom, science does not care how clever or clairvoyant you were at guessing your results ahead of time. Your report should

not be a personal history of your stillborn thoughts. Scientific integrity does not require you to lead your readers through all your wrongheaded hunches only to show — *voilà!* — they were wrongheaded.

Your overriding purpose is to tell the world what you think you have learned from your study about human behavior. That may or may not be the same as telling the world about what you used to think about human behavior when you began this investigation. If your results suggest an instructive or compelling framework for the presentation of your study, then adopt that framework, making the findings that tell us the most about human behavior the centerpiece of your presentation. An appropriate metaphor here is to think of your data as a jewel. Your job is to cut and polish this jewel, to select the facets to highlight, and to craft the best setting for it. Good report writing is largely a matter of good judgment; despite the standardized format, it is not a mechanical process.

And so, think about your report by thinking about your data. You may even find that the easiest way to begin is to write the "Results" section first.

The "Hourglass" Shape of the Report

An experimental report is usually written in the "shape" of an hourglass. It begins with broad general statements, progressively narrows down to the specifics of your particular study, and then broadens out again to more general considerations. Thus:

The introduction begins broadly:	"Humanity has long been thought of as basically evil."
It becomes more specific:	"Aggression has been seen as innate; altruism, as learned."
And more so:	"But studies of various animal species show that altruism often occurs . . ."
And more so:	"Indeed, Brewer reports that worker ants often sacrifice their own lives in order . . ."
Until you are ready to introduce your own study in conceptual terms:	"Two classes of behavior were selected, one antisocial, one prosocial . . ."
The method and results sections are the most specific, the "neck" of the hourglass:	(Method) Fifteen nursery school children were given M&M's and then observed. . . . (Results) Table 1 shows that 13 of the 15 children were more cooperative . . ."

The discussion section begins with the implications of your study:	"These results show that not all prosocial behavior needs to be learned . . ."
It becomes broader:	"Clearly we need a more symmetric approach to anti- and prosocial behaviors . . ."
And more so:	"Humanity, then, can be viewed as both evil and good; both predestined and free; capable of great sin, but capable of great goodness as well."

This example may be a bit more grandiose in its opening and closing statements than would be appropriate for a professional journal article; but if your study is carefully executed and conservatively interpreted, you deserve to indulge yourself a bit at the two broad ends of the hourglass. Being dull only appears to be a prerequisite for publishing in the professional journals.

INTRODUCTION

What Is the Problem Being Investigated?

The first task of the research report is to introduce the background and nature of the problem being investigated. Even if your study were only asking a simple empirical question about human behavior or were directed toward a practical problem or policy issue, you must still place the question or issue into a larger context so that readers know why it is of any general significance. Here, for example, is an introduction to an article entitled "Does Sex-biased Job Advertising 'Aid and Abet' Sex Discrimination?" By Sandra and Daryl Bem (1973):

Title VII of the 1964 Civil Rights Act forbids discrimination in employment on the basis of race, color, religion, national origin — and sex. Although the sex provision was treated as a joke at the time — and was originally introduced in an attempt to defeat the bill — more than 40% of the complaints warranting investigation in the first year of the Act were sex discrimination complaints. Nearly 6,000 charges of sex discrimination were filed in 1971 alone.

Title VII extends as well to practices that aid and abet discrimination. For example, the Act forbids job advertisements from indicating a preference for one sex or the other unless sex is a bona fide occupational qualification for employment. In interpreting this provision, the Equal Employment Opportunities Commission (EEOC) has ruled that even the practice of labeling help-wanted columns as "Male" or "Female" should be considered a violation of the law.

Nevertheless, a large number of employers continue to write advertisements that specify a sex preference, and many more write advertising copy clearly intended to

appeal to one sex only. Moreover, many newspapers continue to divide their help-wanted advertisements into sex-segregated columns.

Do these advertising practices aid and abet discrimination in employment by actually discouraging applicants of one sex or the other from applying for jobs for which they are otherwise well qualified? The two studies reported in this article sought to answer this question empirically. Both were conducted and presented as part of legal testimony, the first in a suit filed by the EEOC against American Telephone and Telegraph Company, the second in a suit filed by the National Organization for Women against *The Pittsburgh Press*.

Note how this introduction conforms to the "hourglass" shape of report writing by beginning with the 1964 Civil Rights Act in general and then successively narrowing the focus to the sex provision of the act, the aiding and abetting clause, and finally to the specific practices that are the subject of the experiments to be reported.

The same reporting strategy is employed if your study was designed to contribute to some aspect of psychological or sociological theory. In this case, you need to summarize the theory or conceptual framework within which you are working. But no matter how theoretical or esoteric your study is, an intelligent nonprofessional — perhaps your grandmother — should still be able to grasp the nature of the problem and understand why he, she, or anyone should care. Here are four rules of thumb for helping that reader out:

1. Write in English prose, not psychological or sociological jargon.
2. Don't plunge the unprepared reader into the middle of your problem or theory. Take the time and space necessary to lead the general reader up to the formal or theoretical statement of the problem step by step.
3. Try to open with a statement about human behavior, not the behavior of behavioral scientists or their research. (This rule is almost always violated in the professional journals. Don't use them as a model here.)
4. Use examples to illustrate theoretical points or to help introduce theoretical or technical terms. The more abstract the theory, the more important such examples become.

EXAMPLES OF OPENING STATEMENTS:

Wrong: Recent research in the forced-compliance paradigm has focused on the effects of predecisional choice and incentive magnitude.

Wrong: Festinger's theory of cognitive dissonance has received a great deal of attention during the past 15 years.

Right: The individual who holds two beliefs that are inconsistent with one another may feel uncomfortable. For example, the person who knows that he or she enjoys smoking but believes it to be unhealthy may experience a discomfort arising from the disharmony or inconsistency between these two thoughts or cognitions. This feeling of discomfort has been called *cognitive dissonance* by social psychologist Leon Festinger (1957), who suggests that individuals will be motivated to remove this dissonance in whatever way they can . . .

The Literature Review

After you have set the stage in your opening statement, summarize the current state of knowledge in the area of investigation. What previous research has been done on

this problem? What are the pertinent theories of the phenomenon, if any? You should have familiarized yourself with previous work on the topic before you designed your own study, and hence most of your literature search should have been done by the time you are ready to write your report. Nevertheless, your results may have led you to recast your study in a slightly different framework or to introduce a new aspect of the problem. In this case, you may need to cite references you had not previously consulted. Suppose, for example, that you did discover an unanticipated sex difference in your results. You should then go back to the literature to see if other investigators have found such a difference or to see if there are any related findings that might explain your unexpected result. If you plan to make the sex difference a central feature of your report, then you should discuss the topic of sex differences in the introduction, including citations to the relevant previous findings. If you plan to mention the sex difference only as a subsidiary finding, however, then postpone any discussion of sex differences until the discussion section. (You should now begin to appreciate why you cannot really begin your report until you have a clear view of the results already in mind.)

In reviewing previous work, you need not describe every study ever done on your problem. Cite only articles pertinent to the specific issues with which you are dealing; emphasize their major conclusions, findings, or relevant methodological issues and avoid unnecessary detail. If someone else has written a review article that surveys the literature on the topic, you can simply refer your own readers to the review and present only its most pertinent points in your own report. Even when you must describe an entire study, try to condense it as much as possible without sacrificing clarity. One way of doing this is to describe one variation of the procedure in chronological sequence, letting it convey the overview of the study at the same time. Here, for example, is a description of a very complicated experiment on attitude change designed to test Festinger's theory of cognitive dissonance (Festinger and Carlsmith, 1959):

Sixty male undergraduates were randomly assigned to one of three conditions. In the \$1 condition, the subject was first required to perform long repetitive laboratory tasks in an individual experimental session. He was then hired by the experimenter as an "assistant" and paid \$1 to tell a waiting fellow student (a confederate) that the tasks were fun and interesting. In the \$20 condition, each subject was hired for \$20 to do the same thing. Control subjects simply engaged in the tasks. After the experiment each subject indicated on a questionnaire how much he had enjoyed the tasks. The results showed that \$1 subjects rated the tasks as significantly more enjoyable than did the \$20 subjects, who, in turn, did not differ from the control subjects.

This kind of condensed writing looks easy. It is not, and you will have to write and rewrite such summaries repeatedly before they are both clear and succinct. The preceding paragraph is the eighth draft.

Books and articles are cited in the text of the report by giving the author's last name and the date of publication. For example: "According to Festinger (1957), people find cognitive dissonance uncomfortable. Not everyone, however, agrees with this conclusion (e.g., Abelson, 1968; Bem, 1967; Kermit, 1979). Nevertheless, direct evidence for internal discomfort has actually been demonstrated in at least one study (Zanna, Freud, & Theophrastus, 1977)." Note that footnotes are not used for references or citations.

Your Study

As you come to the end of the introduction, it is often useful to introduce your own study in brief overview. The purpose is not to discuss procedural details, but to provide a smooth transition into the method section, which follows immediately. The following example could have ended the introduction to the previously cited sex-biased advertising study:

The question, then, is whether or not such advertising practices discourage potential applicants from applying for jobs. The present study sought to answer this question by asking male and female high school seniors to read several telephone job advertisements and to rate their interest in each job. The interest ratings were analyzed to see if advertisements written in nonsexist language would increase the interest that men and women would show in jobs stereotyped for the "other" sex.

METHOD

What to Include

Readers need to know in considerable detail how the study was carried out. What was its basic design? If the study was an experimental one, just what were the experimental manipulations? (For example, was "threat" established by telling the subjects that they were about to take a very difficult test, which would determine their grades in a course, or by shouting, "Fire!"?) At what point or points were the measurements taken?

If the data were collected by means of questionnaires or interviews, exactly what questions were asked? (The questionnaire or interview schedule is often given in an appendix.) How much and what kind of experience had the interviewers had, and how were they trained for this particular study? If the measurements were based on observation, what instructions were given to the observers?

Readers also need to know how the observations or replies to questions were translated into measures of the variables with which the study was concerned. (For example, which questions were taken into account in estimating "alienation"; or what kinds of bystanders' behavior were classified as "helping"?)

Regarding the sample used in the study, readers should be told: Who were the subjects? How many were there? How were they selected? These questions are crucial for estimating the probable limits of generalizability of the findings. Are elaborate conclusions being drawn on the basis of responses of ten college sophomores, selected because they happened to be friends of the investigator? Were only women interviewed? If so, is there any basis for extending the findings to people in general? Intensive study of a small number of cases that do not constitute a representative sample of any specifiable population may be quite valuable. Nevertheless, the number and characteristics of the participants on which the findings are based should be clearly stated so that readers can draw their own conclusions about the applicability of the findings to other groups.

If you conducted a fairly complex experiment in which there was a sequence

of procedures or events, it is often helpful to describe the study as it was seen from the subject's point of view. First give an overview of the study, including a description of the subjects, setting, and the variables assessed; but then describe the sequence of events in chronological order so that the reader is carried through the experience as a subject was. Provide summaries or excerpts of what was actually said to the subject, including any rationale or "cover story" that was given. Show sample items from questionnaires, labels on attitude scales, pictures of apparatus or stimulus materials, and so forth, even if you also include the complete questionnaires or rating scales in an appendix to your report. If you administered a standard personality test, describe its general properties, and give a sample item even if it is a fairly familiar instrument (for example, "Subjects then filled out the Marlow-Crowne Social Desirability Scale, a true-false inventory that taps the degree to which a person describes him or herself in socially desirable terms (e.g., 'I have never lied')." The purpose of all this is to give the readers a "feel" for what it was like to be a subject. This often bears importantly upon the interpretation of your results, and readers should be in a position to arrive at their own judgments about your conclusions.

Name all operations and variables with easily recognized and remembered labels. Don't use abbreviations (The AMT5% group) or empty labels (Treatment 3). Instead, tell us about the sex-biased ads and the sex-neutral ads, the success group versus the failure group, the teacher sample versus the student sample, and so forth. It is also better to label groups or treatments in operational rather than theoretical terms. It is difficult to remember that it was the High Dissonance group that was paid \$1 and the Low Dissonance group that was paid \$20. So tell us instead about the \$1 group and the \$20 group. You can remind us of the theoretical interpretation of these variables again later when it is necessary. And, finally, it is often helpful in a complicated experiment to end your description with a one or two sentence summary of the procedure and its purpose.

An Example

The following example is excerpted from the method section of the sex-biased advertising study cited earlier.

METHOD

SUBJECTS

One-hundred twenty seniors from a racially integrated high school in the San Francisco Bay area served as subjects. Half were male and half were female. Few planned to go on to any 4-year college. Students who were not planning to go on to college were purposely sought as subjects so that they might be both appropriate for and interested in jobs like those advertised by the telephone company. (As seniors, many would even be preparing for jobs like these in the near future.)

PROCEDURE

Each student was given a booklet containing 12 job advertisements and was asked to indicate on a 6-point scale how interested he or she would be in applying for each job. The scale ranged from "very uninterested" to "very interested" and was labeled at each point. The 12 advertisements included four telephone jobs and eight nontelephone jobs. In order of appearance, the jobs were: appliance sales, telephone operator, photographer,

travel agent, telephone frameman, dental assistant, taxicab driver, telephone service representative, assistant buyer, keypunch operator, telephone lineman, and public relations/advertising.

The cover sheet introduced all 12 jobs as follows: "All of the jobs have a starting salary of between \$100 and \$120 per week with regular raises after that. None of the jobs requires any previous training or experience beyond high school graduation; all of them provide paid on-the-job training." The phrase, "An Equal Opportunity Employer m/f," appeared at the end of every job advertisement.

SEX-BIASED JOB ADVERTISEMENTS. One-third of the booklets advertised the telephone jobs in the sex-biased format used by AT&T. In other words, these ads were copied verbatim from AT&T ads and brochures furnished to us by the EEOC. The four sex-biased telephone advertisements were worded as follows:

Telephone Operator:

WHO SAYS IT'S A MAN'S WORLD?

Behind every man's telephone call, there is a woman. She's a smart woman. She's efficient. She has to be. She places the complex long distance calls people cannot place themselves or helps them locate telephone numbers.

Hers is a demanding job. But we make it worth her while. We can make it worth your while too. Not only do we pay a good salary to start, but also offer group life insurance, group medical coverage, good vacations with pay and free pensions.

A stepping stone to management positions.

Pacific Telephone

An Equal Opportunity Employer m/f

[The other advertisements and conditions were similarly described and illustrated.]

SUMMARY OF PROCEDURE. The same four telephone jobs were thus presented in three different formats: the sex-biased format used by AT&T, a sex-unbiased format, and a sex-reversed "affirmative-action" format. All 8 nontelephone ads were worded in sex-unbiased fashion and remained constant in all booklets. In other words, only the wording of the telephone jobs changed from condition to condition. For purposes of analysis, a subject was defined as "interested in applying" for a job if he or she checked any of the following three categories: "slightly interested," "moderately interested," "very interested." A subject was defined as "not interested" if he or she checked "slightly uninterested," "moderately uninterested," or "very uninterested."

Ethical Issues

The subjects or participants in our studies are human beings and should be accorded respect and gratitude for their partnership in the research enterprise. Accordingly, after you have described your procedures, it is appropriate to tell us how you com-

pensated them for their time and effort and how you dealt with any ethical problems. If the research design required you to keep subjects uninformed or even misinformed about the procedures, how did you tell them about this afterwards? Did you obtain written consent from your subjects for their participation? Were they free to withdraw their participation at any time? Were they subjected to any embarrassment or discomfort? Were you observing people who were not aware of that fact? What steps were followed to protect the anonymity of your subjects or participants? If your study raises any of these ethical issues, you should be prepared to justify your procedures and to assure readers that your subjects were treated with dignity and that they left your study with their self-esteem intact and their respect for you and behavioral science enhanced rather than diminished.

RESULTS

In short articles or reports of fairly simple studies, the results and discussion sections are often combined into a single section titled "Results and Discussion." The results are discussed as they are presented, and the section ends with two or three paragraphs that state the conclusions reached, mention qualifications imposed by problems encountered in executing or analyzing the study, and suggest what further research might be appropriate. Most empirical studies can be handled in this fashion.

If, however, you need to present many different kinds of results before you can integrate them or draw any inferences or if you wish to discuss several different matters at length in the final discussion, then you should separate the results and discussion sections. Even in this case, however, there is no such thing as a pure results section without an accompanying discussion. You cannot just throw numbers at readers and expect them to retain them in their memory until they reach the discussion section. In other words, the results section is still part of an integrated linear narrative about human behavior. It, too, is to be written in English prose, not numbers and statistical symbols.

Setting the Stage

Before you can present your main results, there are two preliminary matters that need to be handled. First, you need to present evidence that your study successfully set up the conditions for testing your hypotheses or answering your questions. If your study required you to produce one group of subjects in a happy mood and another in a sad mood, then here is the place to show us that mood ratings made by the two groups were significantly different. If your study involved a mail survey, here is where you need to tell us how many people returned the survey and to discuss the possibility that those who did not respond differed in some important way from those who did. If you divided your subjects into groups, you need to assure us that these groups did not differ on some unintended variable that might bear upon the interpretation of your results (for example, social class, race, sex, age, intelligence). If your study required observers to record behavior or judges to score writ-

ten materials, then you should present quantitative evidence for interobserver agreement or interjudge reliability. If your study required that you misinform the subjects about the nature of the procedures, you should have some evidence that they were not suspicious, that subjects who participated earlier had not informed subjects who participated later, and that your "cover story" produced the state of belief required for the test of your hypotheses. If you had to discard certain subjects, either at the time of the study or later in the data analysis, you need to tell us why and how many and to discuss the possibility that this limits or qualifies the conclusions you can draw.

Not all of these matters need to be discussed at the beginning of the results section. Some of them might already have been mentioned in the method section (for example, interjudge reliabilities of scoring), and others might better be postponed until the discussion section, when you are considering alternative explanations of your results (for example, the possibility that some subjects became suspicious). In some cases, you may not have any hard evidence to cite, and you may have to fall back upon plausible argument: "The possibility that those who did not return the survey were politically more conservative than those who did seems unlikely because surveys were returned in approximately equal numbers from the dormitories, the cooperatives, and the fraternities. If the survey had alienated conservatives, we would have expected a smaller return from the fraternities; moreover . . ."

The decision of what to include at the beginning of the results section to assure the reader that you have successfully set the stage for adequately testing your hypotheses or answering your questions is very much a matter of judgment. It is an important step, but don't overdo it. Get it out of the way as quickly as possible, and then get on with your story.

The second preliminary matter to deal with at the beginning of the results section is the method of data analysis. First you need to describe any overall procedures you followed in converting your raw observations into analyzable data. How were the responses to your mail survey coded for analysis? How were observers' ratings combined? Were all measures first converted to standard scores? (Some of these, too, may have been discussed in the method section and need not be repeated. Similarly, data-combining procedures that are highly specific can be postponed. For example, if you combined three measures of anxiety into a single composite score for analysis, you can tell us about that later when you are about to present the anxiety data.)

Next you need to tell readers about the statistical analysis itself. If this is quite standard, then it can be described in very few words (for example, "All data were analyzed by two-way analyses of variance with sex of subject and mood induction as the independent variables"). If your analysis is unconventional or requires certain statistical assumptions that your data may not meet, however, then you need to discuss the rationale for it, perhaps citing an article or book for the reader who wishes to check into it further.

And finally, this is the place to give readers an overview of the entire results section if it is complicated or divided into several parts. For example: "The results are presented in three parts. The first section presents the behavioral results for the

men, followed by the parallel results for the women. The final section presents the attitudinal and physiological data for both sexes combined."

Presenting the Findings

The general rule in reporting your findings is to give the forest first and then the trees. This is true of the results section as a whole: Begin with the central findings, and then move to more peripheral ones. It is also true within subsections: State the basic finding first, and then elaborate or qualify it as necessary. Similarly, discuss an overall measure of aggression or whatever first, and then move to its individual components. Beginning with one of your most central results proceed as follows:

1. Remind us of the conceptual question you are asking. (For example, "It will be recalled that the men are expected to be more expressive than the women." Or "We turn first to the question: Are the men or the women more expressive?") Note that this is a *conceptual* statement of the question.
2. Remind us of the actual operation performed or the actual behavior measured. (For example, "Do the men produce more tears during the showing of the film than the women?") Note that this is an *operational* statement of the question.
3. Tell us the answer immediately and in English. "The answer is yes." Or "As Table 1 reveals, men do, in fact, cry more profusely than the women."
4. Now, and only now, speak to us in numbers. (Your grandmother can now skip to the next result in case she has forgotten her statistics or her reading glasses.) "Thus the men in all four conditions produced an average of 14 cc more tears than the women, $F(1,112) = 5.79, p < .025$."
5. Now you may elaborate or qualify the overall conclusion if necessary. "Only in the Father-Watching condition did the men fail to produce more tears than the women, but a specific test of this effect failed to reach significance, $t = 1.58, p < .12$."
6. As shown in the preceding examples, every finding that involves a comparison between groups or a relationship between variables should be accompanied by its level of statistical significance. Otherwise, readers have no way of knowing whether the finding could have emerged by chance. But despite the importance of inferential statistics for deciding which results are to be presented as genuine findings, they are not the heart of your narrative and should be subordinated to the descriptive results. Whenever possible, state the result first and then give its statistical significance, but in no case should you ever give the statistical test alone without indicating its meaning in terms of the substantive results. Do not tell us that the three-way interaction with sex, esteem, and parent condition was significant at the .05 level unless you tell us immediately and in English that men are less expressive than women in the negative conditions if father watches—but only for men with low self-esteem.
7. In selecting the descriptive indices or statistics, your purpose should be to show us the behavior of people as vividly as you can, to be as descriptive of the actual behavior observed as possible. If children in your study hit a Bobo doll, tell us how many times they hit it or the percent of children who hit it. If an aggression score represents the mean on a 5-point rating scale, remind us that 3.42 lies between "slightly aggressive" and "quite aggressive." Just as the method section should give us a "feel" for the procedures employed, so, too, the results section should give us a "feel" for the behavior observed.
8. Every set of findings that is sufficiently important to be stressed should be accompanied by a table, graph, or figure showing the relevant data (unless the entire set of findings can be stated in one or two numbers). The basic rule here is that readers should be able to

grasp your major findings *either* by reading the text or by looking at the figures and tables. This implies that tables and figures must be titled and labeled clearly and completely, even if that means constructing a very lengthy title or heading (for example, "Mean number of tears produced in male and female subjects by the heart operation movie as a function of subject sex, parental observation, and self-esteem"). Within the text itself, you must lead the reader by the hand through the table to point out the results of interest: "As shown in Column A of Table 2, men produce more tears (7.58) than women (6.34) . . . Of particular interest is the number of tears produced when both Father and Mother were watching (rows 3 and 4) . . ." Don't just wave in the general direction of the table and expect the reader to ferret out the information.

9. End each section of the results with a summary of where things stand. "Thus, except for the Father-Watching condition, which will be discussed later, the hypothesis that men cry more than women in response to visually-depicted grief appears to receive strong support."

10. Lead into the next section of the results with a smooth transition sentence: "Men may thus be more expressive than women in the domain of negative emotion, but can we assume that they are also more willing and able to express positive emotions? Table 3 shows that we cannot . . ." (Note, again, that you should give the reader the "bottom line" immediately.) As the results section proceeds, you should continue to summarize and "update" the reader's store of information frequently. The reader should not have to keep looking back to retrieve the major points of your plot line.

By structuring the results section in this way, by moving from forest to trees, by announcing each result clearly in prose before wading into numbers and statistics, and by summarizing frequently, you permit the reader to decide just how much detail he or she wants to pursue at each juncture and to skip ahead to the next main point whenever that seems desirable.

After you have demonstrated that your quantitative results are statistically reliable, it is often useful to become more informal and to describe the behavior of particular individuals in your study. The point is not to prove something, but to add richness to your findings, to share with the readers the "feel" of the behavior: "Indeed, two of the men used an entire box of Kleenex during the showing of the heart operation, but yet would not pet the baby kitten owned by the secretary."

An Example

The following example is from the results section of the same sex-biased advertising study cited earlier.

RESULTS

Do sex-biased job advertisements discourage men and women from applying for "opposite-sex" jobs? As shown in Figure 14.1, our results clearly suggest this to be the case.

Consider first the results for women. When the jobs of lineman and frameman were advertised in a sex-biased format, no more than 5% of the women were interested. When these same jobs were advertised in a sex-unbiased format, 25% of the women were interested. And when the ads for lineman and frameman were specifically written to appeal to woman, nearly half (45%) of the women in our sample were interested in applying for one or the other of these two jobs ($X^2 = 8.53$, $p < .01$, one-tailed). In other words, sex-biased advertisements do discourage women from applying for so-called male

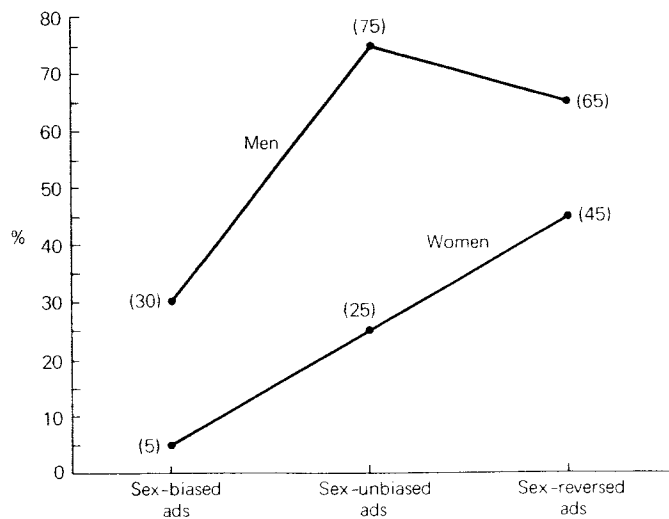


FIGURE 14.1 Percent of men and women who were interested in applying for either of the “opposite-sex” jobs. (Each data point represents 20 subjects.)

jobs; more women would be interested in applying for such jobs if the ad’s sex bias were removed; and even more women would be interested if affirmative-action ads were specifically written to recruit them.

The results for men show a similar, but not identical, pattern. As can be seen in Figure 1, men are generally more interested in the jobs of operator and service representative than women are in the jobs of lineman and frameman. (This difference may be due, in part, to the fact that Pacific Telephone does employ male operators in the Bay Area.) Despite this fact, the results clearly indicate that sex-biased job advertisements still tend to discourage men from applying for jobs as operator and service representative ($X^2 = 9.09$, $p < .01$, one-tailed). For when the sex bias is removed, the percentage of men interested in applying for one or the other of these jobs jumps from 30% to 75%. Wording these ads in sex-reversed “affirmative-action” format does not further increase the percentage of men who are interested. [Neither does it significantly reduce it, however ($X^2 < 1$, n.s.).] It may be that 75% is the maximum one can expect for any particular job and that a sex-reversed format *would* serve to to further increase male interest for “female” jobs with lesser initial interest.

The results thus indicate that sex bias in the content of a job advertisement does serve to aid and abet discrimination by discouraging both men and women from applying for “opposite-sex” jobs.

DISCUSSION

As we noted earlier, the discussion section is often combined with the results section; for more complex studies or studies with more extended or abstract implications, it often appears separately. In either case, the discussion forms a cohesive narrative with the introduction, and you should expect to move materials back and forth between the introduction and discussion as you rewrite and reshape the report. Top-

ics that are central to your argument will appear in the introduction and, possibly, again in the discussion. Points you have decided to subordinate may not be brought up at all until the discussion section. The closing discussion is also the "bottom" of the hourglass-shaped format and thus proceeds from specific matters about your study to more general concerns (about methodological strategies, for example) to the broadest generalizations you wish to make.

Begin by telling us what you have learned from the study. Open with a clear statement on the support or nonsupport of the hypotheses or the answers to the questions you first raised in the introduction. Do not, however, simply reformulate and repeat points already summarized in the results. Each new statement should contribute something new to the reader's understanding of the problem. What inferences can be drawn from the findings? These inferences may be at a level quite close to the data or may involve considerable abstraction, perhaps to the level of a larger theory regarding, say, emotion or sex differences. What are the theoretical and practical implications of the results?

It is also appropriate at this point to compare your results to those reported by other investigators and to discuss possible shortcomings of your study, conditions that might limit the extent of legitimate generalization or otherwise qualify your inferences. Remind the reader of the characteristics of your subject sample, the possibility that it might differ from other populations to which you might want to generalize; of specific characteristics of your methods that might have influenced the outcome; or of any other factors that might have operated to produce atypical results. But do not dwell compulsively on every flaw! In particular, be willing to accept negative or unexpected results without a tortured attempt to explain them away. Don't make up long, involved, pretzel-shaped theories to account for every hiccup in the data. There is probably a $-.73$ correlation between the clarity of an investigator's results and the length of his or her discussion section. Don't contribute to this shameful figure.

But suppose that, on the contrary, your results have led you to a grand new theory that injects startling clarity into your data and revolutionizes your view of the problem area. Doesn't that justify a long discussion section? No! In this case you should rewrite the entire report so that you *begin* with your new theory. As we noted earlier, your reporting task is to provide the most informative and compelling framework for your study from the opening sentence. If your new theory does that, don't wait until the discussion section to spring it on us. A research report is not necessarily a chronology of your thought processes.

The discussion section also includes a discussion of questions that remain unanswered or new questions that have been raised by the study along with suggestions for the kinds of research that would help to answer them. Indeed, suggesting further research is probably the most common way of ending a research report.

Common, but dull! If you are following the hourglass-shaped format of the research report, then the final statements should be broad general statements about human behavior, not precious details of interest only to behavioral scientists. Consider: "Thus further research will be needed before it is clear whether the androgyny scale should be scored as a single continuous dimension or partitioned into a 4-way typology." No, no! Such a sentence may well be appropriate somewhere in

the discussion, but please, not your final farewell. Why not: "Perhaps, then, the concept of androgyny will come to define a new standard of mental health, a standard that will liberate men and women rather than incarcerate them." Yes, yes! End with a bang, not a whimper!

SUMMARY OR ABSTRACT

A research report often concludes with a very brief summary that restates in barest outline the problem, the procedures, the major findings, and the major conclusions drawn from them. This is called the "Summary." Most journals have now replaced the summary with an **abstract**, an even briefer summary that appears at the very beginning of the article rather than at the end.

An abstract is only about 125 words or less. It permits potential readers to get a quick overview of the study and to decide if they wish to read the report itself. It is very difficult to write because it is so condensed, and it will require slaving over every word to attain clarity. You cannot summarize everything in an abstract—or even in a more extended summary at the end of your report if you choose that format. Instead, you must decide what you wish to highlight, and this implies that you should write the abstract or summary last, after you have a firm view of the structure and content of your complete report.

The title of your report itself serves as part of the abstract or summary. It, too, should convey the content of your study as accurately and as clearly as possible so that a potential reader can decide whether or not to go further. The most informative titles are those that manage to mention both the dependent and independent variables (for example, "Emotional responses of men and women to visual stimuli as a function of self-esteem and being observed by parents"). Here is how the report of the sex-biased advertising study begins.

Does Sex-biased Job Advertising "Aid and Abet" Sex Discrimination?

ABSTRACT

Two studies are reported which indicate that both sex-biased wording in job advertisements and the placement of help-wanted ads in sex-segregated newspaper columns discourage men and women from applying for "opposite-sex" jobs for which they might well be qualified. Both studies were originally conducted and presented as part of legal testimony in actual sex discrimination cases.

Title VII of the 1964 . . .

REFERENCES

All books and articles cited in the text of a research report are listed at the end of the report under the heading "References." They are arranged alphabetically according to the author's last name, a format that parallels the way in which they are cited in the text. The following examples include all the nonfictitious references cited in this chapter.

The following three references are to journal articles cited in this chapter. The italicized numbers are volume numbers; they are followed by the page numbers.

- Bem, S. L., & Bem, D. J. Does sex-biased job advertising "aid and abet" sex discrimination? *Journal of Applied Social Psychology*, 1973, 3, 6-18.
- Festinger, L., & Carlsmith, J. M. Cognitive consequences of forced compliance. *Journal of Abnormal and Social Psychology*, 1959, 58, 203-210.
- Martyna, W. What does "He" mean? *Journal of Communication*, 1978, 28, 131-138.

The following three references are to books cited in this chapter.

- The American Psychological Association. *Publication manual* (2nd ed.). Washington, D.C.: American Psychological Association, 1974.
- Festinger, L. A. *A theory of cognitive dissonance*. Stanford: Stanford University Press, 1957.
- Strunk, W., Jr., & White, E. B. *The elements of style* (3rd ed.). New York: Macmillan, 1979.

The following example, not cited in this chapter, illustrates a reference to an article by Zimbardo that appears in a book edited by Arnold and Levin.

- Zimbardo, P. G. The human choice: Individuation, reason, and order versus deindividuation, impulse, and chaos. In W. A. Arnold & D. Levin (Eds.), *Nebraska symposium on motivation* (Vol. 17). Lincoln: University of Nebraska Press, 1969.

APPENDIX

The appendix to a research report contains copies of materials used in the research that would be too extensive to include in the report itself. These might include questionnaires, attitude scales, stimulus materials, or photographs and drawings of experimental apparatus or the research setting. These are materials that would help someone else duplicate your experiment in detail. A second appendix might contain tables of data or additional data analyses that are too extensive or too peripheral to include in the report itself. This is information that would enable an interested reader to explore your data in fine detail or to answer questions about your results that you omitted or that may not even have occurred to you.

Because journal space is at a premium, most journal articles do not have appendixes. Readers who have questions about the data or who wish to replicate the experiment themselves usually communicate directly with the original investigator. Dissertations, theses, and research reports done for class assignments, however, usually do include such appendixes. In fact, it is often useful in research reports done for class assignments to include an appendix containing the raw data themselves. Often an instructor will be able to spot findings in the data that may have been overlooked or to suggest alternative ways of organizing or analyzing data. In short, whether or not an investigator includes appendixes in a report depends a lot upon who the readers will be and the likelihood that they will find the supplementary materials useful. But as we noted earlier, the report itself should still be self-con-

tained; a reader should not have to consult an appendix to understand the methods or results. For example, even if your entire survey questionnaire is contained in an appendix, you should still provide a few sample items from it in the method section.

SOME SUGGESTIONS ON PROCEDURE AND STYLE

Accuracy and Clarity

The overriding criteria for good scientific writing are accuracy and clarity. If your report is interesting and written with flair and style, fine. But this is still a subsidiary virtue. First strive for accuracy and clarity.

Work from an Outline

Even though the standardized format we have described here will go a long way toward organizing your report, you will be able to produce a more coherent report with a minimum of rewriting if your first organize the main points in outline form, examine the logic of the sequence, check to see if important points are omitted or misplaced, and so forth. As we suggested earlier, it is sometimes helpful to begin with the "Results" section, and it is also useful to think of your introduction and final discussion as part of the same conceptual narrative.

Write Simply, Use Examples, Use Friends as Reviewers

As we noted earlier, it should be possible for a nonprofessional to read your report and comprehend what you did and why—even if he or she knows nothing about statistics, experimental design, or the substantive area of your research problem. This is achieved by writing simply, with a minimum of jargon, and using frequent examples to illustrate and introduce technical concepts. The more abstract the subject matter, the more you need examples to tie it back to the reader's own experience and previous level of knowledge.

Read over your own writing, trying to take the viewpoint of an intelligent but nonprofessional reader. Ask at each point, "Do I know yet what this concept means?" "Is this clear?" The ability to take the role of a "naive" reader or listener is the most important skill in writing or teaching. It is not easy. And because it is not easy, you should use your friends as reviewers, especially those who are unfamiliar with the subject matter area. If they find something unclear, do not argue with them or attempt to clarify the problem verbally. If they have read carefully and conscientiously, they are always right. *By definition, the writing is unclear.* Their suggestions for correcting the unclarity may be wrong, even dumb. But as unclarity detectors, readers are never wrong.

Be Compulsive. Be Willing to Restructure

The best writers rewrite nearly every sentence in the course of polishing their successive drafts. The probability of writing a sentence perfectly the first time is vanishingly small, and good writing requires a high degree of compulsiveness and attention to detail. But whether or not one worries about writing style in the course of producing the first draft is to some extent a matter of individual taste. Some experienced writers spend a long time over each sentence, carefully choosing each word. But when the purpose is to convey information rather than to achieve a literary production, it is probably true for most people that time is saved in the long run by writing the first draft as quickly as possible. Once it is on paper, one can go back and rewrite sentences and paragraphs, fortified by the knowledge that at least a first draft of the report has already been produced.

In writing and rewriting, it is important to remember that a badly built building cannot be salvaged by brightening up the wallpaper. Rewriting often means restructuring, not just tinkering with sentences or paragraphs. Sometimes it is necessary to restructure totally an experimental report, even to go back and do more data analysis, just to iron out a bump in the logic of the argument. Don't get so attached to your first draft of the report that you are unwilling to tear it apart and rebuild it. Rewriting often means restructuring.

Person and Voice

In the past, scientific writing employed the third person, passive voice almost exclusively ("The experiment was designed by the authors to test the hypothesis that . . ."). This is dull and clumsy and is no longer the norm. It is now permissible to use the first person and desirable to use the active voice. Do not refer to yourself as "the author" or "the investigator." Do not refer to yourself as "we" unless there really are two or more authors or investigators involved. You may refer to yourself as "I" as long as you do it sparingly; constant use of the first person tends to distract the reader from the subject matter, and it is best to remain in the background. Leave the reader in the background, too. Don't say, "The reader will find it hard to believe that . . ." or "You will be surprised to learn . . ."

Perhaps you are wondering what you *can* do. You can let people and their behavior serve as the subjects of sentences: "Individuals appear to cling to their prejudices even when . . ." "Racial prejudice, then, diminishes when persons interact . . ." You may also refer to the reader indirectly from time to time: "Consider, first, the results for men . . ." You may also refer to yourself and the reader as "we" in some contexts: "We can see in Table 1 that most of the tears are produced . . ." "In everyday life, of course, we tend to put great emphasis on a person's gender . . ."

Tense

Use the past tense when reporting the previous research of others ("Bandura reported . . ."), how you conducted your study ("Observers were posted behind . . ."), and specific past behaviors of your subjects or participants ("Two of the group

members talked . . ."). Use the present tense for results currently in front of the reader ("As Table 2 shows, the emotional film is more effective . . .") and for conclusions that are more general than the specific results ("Sex-biased advertising, then, leads qualified applicants to ignore . . .").

Gender

Because of the increased awareness that language can perpetuate stereotypes, authors of journal articles are now expected to avoid writing in a manner that reinforces questionable attitudes and assumptions about people and sex roles. The most awkward problems arise from the common use of masculine nouns and pronouns when the content refers to both sexes. The generic use of "man," "he," "his," and "him" to refer to both men and women is not only misleading in many instances, but research shows that readers visualize and think of male persons when these forms are used (Martyna, 1978). Sometimes the results are not only sexist, but humorous in their naive androcentrism: "Man's vital needs include food, water, and access to females" (quoted in Martyna, 1978).

Unfortunately, the language has not caught up with this new awareness, and the available alternatives are not wholly satisfactory. In most contexts, the simplest alternative is the use of the plural. Instead of saying, "The individual who displays prejudice in his personal relations is probably . . .," substitute "Individuals who display prejudice in their personal relations are . . ." If it is stylistically important to focus on the single individual, the use of "he or she," "him or her," and so forth is acceptable but clumsy if used very often or more than once in a single sentence: "The individual who displays prejudice in his or her personal relations is . . ." Alternatives like *he/she* or *s/he* are unpronounceable and grate on the eye. They should be avoided. Eventually, our society will probably adopt one of the neutral forms currently being suggested (for example, "e" or "tey"), but none of them has yet won wide acceptance. You may find it instructive to look back over this book for examples of how we have dealt with the pronoun problem during this time of transition.

Stylistic matters aside, however, you must be accurate in your use of pronouns when you describe your research or that of others. Readers must be explicitly informed about the sex of experimenters, observers, subjects, and participants. When referring to males, use male pronouns; when referring to females, use female pronouns. Under no circumstances should an investigator omit or hide sex identity in an attempt to be unbiased. Knowledge of sex is often critically important.

The problems of gender reference become easier when we move away from pronouns. Words like *man* and *mankind* are easily replaced by terms like *people*, *humanity*, *humankind*, and so forth. Instead of manning projects, we can staff them, hire personnel, or employ staff. The federal government has already desexed occupational titles so that we now have letter carriers rather than mailmen; in private industry we have flight attendants rather than stewardesses. And in life, children need nurturing or parenting, not just mothering. In all these cases, you will find it easy to discover the appropriate sex-neutral term if you simply think in terms of the activity or task rather than the person doing it.

And, finally, we come to plain old stereotyping, hidden assumptions about the roles that men and women play that can sneak into our prose. (The following examples are taken from the *Publication Manual* of the American Psychological Association [Change Sheet #2, 1977].) The author who notes that "research scientists often neglect their wives and children" fails to acknowledge that women as well as men are research scientists. Why not "Research scientists often neglect their families"? Of if the author specifically meant male research scientists, this should have been said explicitly. Often stereotypes show up in the asymmetry of the words used: *Man and wife* rather than *man and woman* or *husband and wife* assumes that the man is defined by his personhood, the woman by her relationship to a man. Referring to adult male persons as *men* and adult female persons as *girls* is another common sexist practice.

Adjective use can also connote bias. Thus, we have ambitious men and aggressive women or cautious men and timid women—where the use of different adjectives denotes not different behaviors on the part of men and women, but our biased interpretations and evaluations of their behaviors.

Even verbs can carry hidden bias: "The client's husband lets her teach part-time." Here the author intended to communicate the working status of the woman but inadvertently revealed a stereotype about husband-wife relationships. The author should have said, "The client teaches part-time." If the bias is not the author's, but the client's or her husband's, then that should be clearly indicated: "The client's husband 'lets' her teach part-time." Or "The husband says he 'lets' the client teach part-time." Or "The client says her husband lets her teach part-time." Or "The client says sarcastically that her husband 'lets' her teach part-time." The client and her husband are allowed to say such things. You are not.

And, finally, try to avoid sex-role stereotyping when you select examples. Beware of your own unconscious assumptions about the sex of doctors, homemakers, nurses, athletes, and so forth. Why not: "The athlete who believes in her ability to succeed . . ."? Let our writing promote the view that woman's vital needs are the same as man's: food, water, and access to equality.

Where to Find Additional Guidance

There are two documents that can provide additional information concerning the preparation of your research report. The *Publication Manual* (revised edition, 1974) published by the American Psychological Association provides highly specific information about the exact format used in the professional journals, as well as general advice on format and style of the kind we have included in this chapter. If you are actually preparing a report for a journal, then you should consult the *Manual*, as well as look at articles in the relevant journal itself.

There are many books on how to write expository prose, covering grammar, word usage, punctuation, and style. One of the best is *The Elements of Style* (3rd edition, paperback, 1979) by Strunk and White. It can be read in an hour and is highly entertaining as well. (But beware; it explicitly argues for continuing the use of generic masculine pronouns.)

Enough advice. Go write your report.